8.

-- DRAFT –

STORMWATER C.3 PROVISIONS

(1)
SITE DESIGN GUIDELINES

Site Design Guidelines

Source Control Measures

Model Conditions of Approval for Pesticide Reduction, including Attachments "A," "B," and "C"

Site design guidelines are to be used by applicants during preparation of their site plans, stormwater control and landscape plans.

(2)
SPECIAL CONDITIONS OF APPROVAL

Construction BMPs

Standard Special Conditions

Operational BMPs

These are special conditions that the Planning Commission will likely see recommended for applicable projects regarding stormwater C.3 issues.

(1)

SITE DESIGN GUIDELINES

Site Design Guidelines

Source Control Measures

Model Conditions of Approval for Pesticide Reduction,
including Attachments:
"A" (Landscaping Elements for Stormwater Treatment)
"B" (Pest Resistant Plants for the San Francisco Bay Area)
"C" (Fact Sheet on Landscape Maintenance Techniques for Pest Reduction)

SITE DESIGN GUIDELINES

1. Minimize directly connected impervious surfaces. Break up parking lots with landscaped areas. Separate impervious surfaces (buildings, parking areas, drive aisles, pedestrian walks and plazas) with pervious areas.
2. Provide reduced width sidewalks and incorporate landscaped buffer areas between sidewalks and streets. However, sidewalk widths must still comply with regulations for the Americans with Disabilities Act and other life safety requirements.
3. Design residential streets for the minimum required pavement widths needed to comply with all zoning and applicable ordinances to support travel lanes, on-street parking, emergency, maintenance, service vehicle access, and sidewalks.
4. Comply with all zoning and applicable ordinances to minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turn-arounds should be considered.
5. Use permeable materials for private sidewalks, driveways, parking lots, or interior roadway surfaces (examples: hybrid lots, parking groves, permeable overflow parking, etc.).
6. Use open space development that incorporates smaller lot sizes.
7. Comply with all zoning and applicable ordinances to reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together (this does not include chain-linking of driveways).
8. Comply with all zoning and applicable ordinances to reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.
9. Direct roof-top runoff to pervious areas such as yards, open channels, or vegetated areas, and avoid routing roof-top runoff directly to the roadway or the storm water conveyance system.

MODEL SITE DESIGN CONDITIONS OF APPROVAL (DRAFT)

Minimize Land Disturbance

1. Significant natural features and resources on site such as undisturbed forest area, setbacks, easements, trees, steep slopes, erosive soils, wetlands or riparian areas shall be identified within the area to be developed and protected during construction and during future use of the site.
2. Site layout shall conform to natural landforms on-site. Buildings shall be located to utilize natural drainage systems as much as possible and avoid unnecessary disturbance of vegetation and soils. Development on unstable or easily erodible soils shall be avoided due to their greater erosion potential.

Minimize Impervious Surfaces

3. Directly connected impervious surfaces shall be minimized. Runoff from impervious areas shall be channeled to pervious areas (e.g., park strips, vegetated planters) where possible prior to discharge to the storm drain.
4. Site permeability shall be maximized by clustering buildings, reducing building footprints, minimizing impervious surfaces, and paving with permeable materials where feasible.
5. The project shall cluster structures and incorporate smaller lot sizes where feasible to reduce overall impervious surface coverage and provide more undisturbed open space, for protection of water resources.

Preserve Open Space

6. The amount of open space on the site shall be maximized and the open space area maintained in a natural manner.
7. Undisturbed natural areas such as forested conservation areas and stream buffers shall be utilized to treat and control stormwater runoff from other areas of the site with proper design.

Reduce Effects of Hydromodification

8. The project shall utilize infiltration measures to reduce stormwater discharge to the greatest extent feasible.
9. The applicant shall minimize increases in stormwater flow and volume resulting from the development project to protect creeks and waterways from flooding and erosion impacts.

Street Design

10. Where density, topography, soils, slope and safety issues permit, vegetated open channels or other landscape measures shall be used in the street right of way to convey and treat stormwater runoff from roadways.
11. Sidewalks shall be sloped to drain to adjacent vegetated park strips.

Parking Lots

12. Where feasible, parking lots and other impervious areas shall be designed to drain stormwater runoff to vegetated drainage swales, filter strips, and/or other treatment devices that can be integrated into required landscaping areas and traffic islands prior to discharge into storm drain systems.
13. The amount of impervious area associated with parking lots shall be minimized by providing compact car spaces, reducing stall dimensions, incorporating efficient parking lanes, and using permeable pavement in overflow parking areas where feasible.
14. Curb cuts (one every 10 feet), tire stops, or other means shall be provided to protect landscaped areas and allow maximum flow of stormwater into landscaped areas.
15. The use of permeable paving for parking and driveway ~~surfaces~~ is encouraged, to reduce runoff from the site. Such paving should meet fire department requirements and be structurally appropriate for the location.

Landscaping as a Stormwater Drainage/Treatment Feature

16. Projects shall be designed to direct stormwater runoff into landscaping or natural vegetation where feasible.
17. Large landscaped areas shall be designed to collect and infiltrate stormwater where feasible. Overflow drains shall be placed so that landscaped areas can store runoff and drain at capacity. Such collection areas shall be designed and maintained to meet vector control requirements.
18. Where possible, runoff from impervious areas such as rooftops, roadways and parking lots shall be directed to pervious areas, open channels or vegetated areas prior to discharge to the storm drain system.

Riparian Areas

19. Naturally vegetated buffers shall be delineated and preserved along perennial streams, rivers, lakes and wetlands.

MODEL LIST OF SOURCE CONTROL MEASURES

Included in Appendix C in the Guidebook, to be used by applicants in formulating their Stormwater Control Plans, and by staff in reviewing those plans:

A. Illegal Dumping to Storm Drain Inlets and Waterways

1. On-site storm drain inlets shall be clearly marked with the words "No Dumping! Flows to Bay," or equivalent, using methods approved by the City.
2. It is unlawful to discharge any wastewater into storm drains, gutters, creeks, or the San Francisco Bay. Unlawful discharges to storm drains include, but are not limited to, discharges from toilets; sinks; industrial processes; cooling systems; boilers; fabric cleaning; equipment cleaning; or vehicle cleaning.
3. It is unlawful to cause hazardous domestic waste materials to be deposited in such a manner or location as to constitute a threatened discharge into storm drains, gutters, creeks or San Francisco Bay.

B. Interior Floor Drains

4. Interior floor drains shall be plumbed to the sanitary sewer system and shall not be connected to storm drains.

C. Parking Lots

5. Interior level parking garage floor drains shall be connected to [a water treatment device approved by the City prior to discharging to] the sanitary sewer system. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

D. Pesticide/Fertilizer Application

6. Landscaping shall be designed to minimize irrigation and runoff, promote surface infiltration where appropriate, and minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.
7. Structures shall be designed to discourage the occurrence and entry of pests into buildings, thus minimizing the need for pesticides. For example, dumpster areas should be located away from occupied buildings, and building foundation vents shall be covered with screens.
8. Additional requirements are covered in the "Model Conditions of Approval for Pest Resistant Landscaping" (August 19, 2002) as shown at the end of this Exhibit.

E. Pool, Spa, and Fountain Discharges

9. Pool (including swimming pools, hot tubs, spas and fountains) discharge drains shall not be connected directly to the storm drain or sanitary sewer system. [Exception: Public pool discharge drains must be connected to the sanitary sewer system, per County Department of Environmental Health requirements.]
10. When draining is necessary, a hose or other temporary system shall be directed into a sanitary sewer clean out. The clean out shall be installed in a readily accessible area [example: within 10 feet of the pool]. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

F. Food Service Equipment Cleaning

11. Food service facilities (including restaurants and grocery stores) shall have a sink or other area for cleaning floor mats, containers, and equipment, that is connected to a grease interceptor prior to discharging to the sanitary sewer system. The cleaning area shall be large enough to clean the largest mat or piece of equipment to be cleaned. The cleaning area shall be indoors or in a covered area outdoors; both areas must be plumbed to the sanitary sewer.

G. Refuse Areas

12. New buildings [such as food service facilities and/or multi-family residential complexes or subdivisions] shall provide a covered or enclosed area for dumpsters and recycling containers. The area shall be designed to prevent water run-on to the area and runoff from the area.
13. Areas around trash enclosures, recycling areas, and/or food compactor enclosures shall not discharge to the storm drain system. Any drains installed in or beneath dumpsters, compactors, and tallow bin areas serving food service facilities shall be connected [to a grease removal device prior to discharging] to the sanitary sewer. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

H. Outdoor Process Activities/Equipment[1]

14. Process activities shall be performed either indoors or outdoors under cover. If performed outdoors, the area shall be designed to prevent run-on to and runoff from the site.

[1] Examples of businesses that may have outdoor process activities and equipment include machine shops and auto repair shops, and industries that have pretreatment facilities.

15. Process equipment areas shall drain to the sanitary sewer system. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

I. Outdoor Equipment/Materials Storage

16. All outdoor equipment and materials storage areas shall be covered [and bermed], or shall be designed to limit the potential for runoff to contact pollutants [or a storm drain inlet valves shall be provided on exterior drains in the area].
17. Storage areas containing non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners or vaults. . The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.
18. All hazardous materials and wastes, on the site must be used and stored in compliance with the City Hazardous Materials Ordinance and Hazardous Materials Management Plan for the site approved by the City.

J. Vehicle/Equipment Cleaning

19. Wastewater from vehicle and equipment washing operations shall not be discharged to the storm drain system. [Optional, e.g. for car dealerships: If water only (without soap or other cleaning agent) is used for rinsing of vehicle exterior surfaces for appearance purposes, the runoff may be discharged to the storm drain system.]
20. Commercial/industrial facilities having vehicle/equipment cleaning needs [and new residential complexes of 25 units or greater] shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. Vehicle/equipment washing areas shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.
21. Commercial car wash facilities shall be designed and operated such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer [or a wastewater reclamation system shall be installed]. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

K. Vehicle/Equipment Repair and Maintenance

22. Vehicle/equipment repair and maintenance shall be performed in a designated area indoors, or if such services must be performed outdoors, in an area designed to prevent the run-on and runoff of stormwater.

23. Secondary containment shall be provided for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.

24. Vehicle service facilities shall not contain floor drains unless the floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer, for which an industrial waste discharge permit has been obtained. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

25. Tanks, containers or sinks used for parts cleaning or rinsing shall not be connected to the storm drain system. Tanks, containers or sinks used for such purposes may only be connected to the sanitary sewer system if allowed by an industrial waste discharge permit. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

L. Fuel Dispensing Areas

26. Fueling areas2 shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.

27. Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area, as defined below1.] The canopy [or cover] shall not drain onto the fueling area.

M. Loading Docks

28. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

29. Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.

30. Door skirts between the trailers and the building shall be installed to prevent exposure of loading activities to rain.

---

[2] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

N. Fire Sprinkler Test Water

31. Sanitary sewer connections shall be provided to drain fire sprinkler test water.

O. Miscellaneous Drain or Wash Water

32. Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.
33. [Air compressor or air conditioner] condensate drain lines may not discharge to the storm drain system.
34. Roof drains shall discharge and drain away from the building foundation to an unpaved area wherever possible.
35. Roof top equipment shall drain to the sanitary sewer. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

MODEL CONDITIONS OF APPROVAL FOR PESTICIDE REDUCTION IN LANDSCAPING PLANS

1. Landscaping shall be designed with efficient irrigation to reduce runoff, promote surface infiltration, and minimize the use of fertilizers and pesticides that can contribute to water pollution.
2. Where feasible, landscaping shall be designed and operated to treat stormwater runoff by incorporating elements that collect, detain, and infiltrate runoff. (Attachment A, "Examples of Landscaping Element for Stormwater Treatment" shall be used as a reference.) In areas that provide detention of water, plants that are tolerant of saturated soil conditions and prolonged exposure to water shall be specified.
3. Pest-resistant landscaping plants shall be considered for use throughout the landscaped area, especially along any hardscaped area. (Attachment B, "Pest Resistant Plants for the San Francisco Bay Area" shall be used as a reference.)
4. Plant materials selected shall be appropriate to site specific characteristics such as soil type, topography, climate, amount and timing of sunlight, prevailing winds, rainfall, air movement, patterns of land use, ecological consistency and plant interactions to ensure successful establishment.
5. Existing native trees, shrubs, and ground cover shall be retained and incorporated into the landscape plan to the maximum extent possible.
6. The City shall approve the installation of comparable substitute pest-resistant plant materials to satisfy the requirements of the approved landscape plan when the approved plants and materials are unavailable for installation, or when other unforeseen conditions prevent the exact implementation of the landscape plan.
7. Proper maintenance of landscaping, with minimal pesticide use, shall be the responsibility of the property owner. (Attachment C, "Fact Sheet on Landscape Maintenance Techniques for Pest Reduction" shall be used as an example education piece for property owners).

Attachment A

"Landscaping Elements for Stormwater Treatment"

Landscaped areas in development sites present valuable opportunities to treat and store runoff. Through a variety of strategies, the volume of runoff and concentration of pollutants found in the runoff from development sites can be minimized, resulting in improved quality of waters discharged into local creeks and the Bay.

A particular concern with landscaped areas is the use of pesticide products for landscape maintenance. Alternative design and maintenance techniques can reduce the potential for pesticides to run off the landscape; reduce the amount of chemicals necessary to ensure healthy plants or eliminate the need for pesticide usage; and decrease the need for landscape maintenance by minimizing pest infestations and creating low maintenance environments. Using these techniques decreases the amount of pesticides entering receiving waters.

The planning and design phases of development present ideal opportunities for inclusion of stormwater treatment into landscape design. It is important to make such considerations early in the development process to ensure effective incorporation and plan for maintenance measures. Described below are considerations suggested for various stages in the development process. These methods are enumerated in more detail in BASMAA's Start at the Source Design Guidance Manual for Stormwater Quality Protection (1999).

PLANNING

Identify sensitive areas to be protected and preserved during construction, such as existing trees, steep slopes, erosive soils, riparian areas or wetlands when planning for site development (Start at the Source, p. 28).

DESIGN

Utilize drainage as a design element in site plan development. Whenever possible, natural drainage systems should guide the pattern of development and influence site layout of pathways, parks and open areas, and building structures. Integrating naturally occurring drainage systems into site design will yield aesthetic and functional benefits (Start at the Source, p. 32). Suggested methods include:

A. Maximizing Permeability

1. Minimizing Directly Connected Impervious Surface Area

Impervious surfaces that are directly connected to the stormwater conveyance system do not take advantage of the potential benefits offered by the infiltration of runoff and filtration of pollutants by plant and soil materials. Direct runoff from pathways to landscaped areas. (Start at the Source, p. 29)

2. Permeable Pavement

When development requires the installment of hard, flat surfaces, porous pavement may be utilized instead of impervious surfaces. Permeable pavement minimizes runoff by allowing the infiltration of water through a load bearing surface where it is stored in an underground reservoir. The materials listed below may be used as porous pavement. (Start at the Source, p. 47)

a. pervious concrete
b. porous asphalt
c. turf block
d. brick
e. natural stone
f. concrete unit paver
g. crushed aggregate (gravel)
h. cobbles
i. wood mulch (for light pedestrian use)

B. Utilizing Treatment Opportunities (Start at the Source, p. 70-73)

1. Landscape Grading

Landscapes that have a slight concave slope have the ability to hold water. This technique is more valuable in permeable soils but can be used as retention/detention basins with proper outlets or underdrains in heavy clay soils.

2. Grass Swales

Grass or vegetation lined swales (channels) can be used as low maintenance linear biofilters along the perimeters of large expanses of pavement. (e.g., parking lots)

3. Multiple Small Basins

Small vegetated retention basins (bioretention areas) can to used to create opportunities for storage, infiltration, and treatment in a landscape. Small basins may be installed in the parkway planting strip, along shoulders of streets, under wood decks, in parking lot planters, and at roof downspouts.

4. Extended Detention Basins

Extended detention basins can be incorporated into landscape design to reduce the volume and velocity of runoff from the site. Detention basins are appropriate landscape elements for developments greater than ten acres and can simultaneously serve as flood control basins, parks, playing fields, tennis courts, open space and overflow parking lots.

5. Wet Ponds

Permanent pools of water that detain and treat stormwater runoff, wet ponds can be incorporated into landscape design to enhance the drainage functions and aesthetic quality of the site. Wet ponds are often surrounded by a fringe wetland to increase stormwater treatment potential and can also be combined with recreational areas (usually appropriate for storm water drainage in a development or project with a drainage area greater than 2 acres but more cost effective for drainage areas greater than 10 acres).

6. Increase the Treatment Potential of the Landscape

The beneficial stormwater detention and treatment elements of a landscape can be optimized by:

a. planting deeply rooted plants that help build soil porosity;

b. allowing exposed leaf surface to collect rainwater before it filters into the soil in order to increase overall detention potential; and

c. selecting plants appropriate for the site climate, exposure, and amount of watering or inundation by water.

Attachment B

"Pest Resistant Plants for the San Francisco Bay Area"

As part of SCVURPPP's effort to reduce pesticide usage, the attached list has been compiled containing various trees and groundcovers used in landscaping that have been found to be resistant to the specified pests. The list is organized by plant genus and enumerates those species in each genus that are particularly resistant, moderately resistant, and particularly susceptible to the specific pest. The list has been compiled using the various resources listed following this discussion. Chosen primarily for pest resistance, the species listed in each genus were then evaluated for characteristics such as drought tolerance, water inundation tolerance, salt tolerance, and fire resistance. Specific "Sunset " climatic zones are noted for some plants. The plants are also designated as native if indigenous to the area and invasive exotic if foreign to the region and potentially invasive. A plant that is not designated as native is not necessarily an invasive exotic.

This list contains plants found to be resistant to specified pests. It is not a list of plants that are particularly hardy and naturally resistant to pests found in the Bay Area. It is the opinion of the consultant who developed this list that native plants are not inherently pest resistant. Native plants found naturally in their specified habitat are accustomed to the prevailing circumstances and therefore are particularly resistant to conditions that might otherwise weaken them. However, the alteration of natural landscape processes that occurs during the creation of controlled landscapes on development sites gives rise to other factors that may make the plants particularly weak and susceptible to pests and diseases they are otherwise be resistant to. Thus, native plants used in controlled landscapes may have unforeseen problems due to the ecological imbalance that is potentially created.

This list may be used as a tool in reducing pesticide usage in many ways. The plants listed are recommended for use by homeowners, developers, and municipalities in attempt to create successful landscapes resistant to common pests. In particular, the list may be handed out as an outreach/education tool to citizens seeking building permits as guidance in choosing plants to be used in landscaping. Municipalities can also utilize the list in choosing plants for their own municipal projects matching the development site conditions with the plant characteristics. They may want to build model gardens utilizing listed plants as examples of landscape plans that reduce the need for chemical maintenance. Planning staff may use the list to screen plant lists in landscaping plans and recommend alternatives to susceptible plants. Lastly, municipalities can request local nurseries to sell the plants listed as resistant as part of their IPM Programs. In making the plants known and available, people are more likely to use them in landscaping and less likely to turn to pesticides for maintenance of their property.

COMMON NAME	GENUS	SPECIES RESISTANCE AND CHARACTERISTICS		Indigenous	Drought Tolerant	Water Tolerant	Salt Tolerant	Fire Resistant	Invasive Exotic
TREES									
Acacia	***Acacia***	**Resistance to:** Acacia psyllid (*Acizzia uncatoides*)	**RESISTANT SPECIES**						
			A. albida						
			A. armata						
			A. aspera						
			A. bailegana						X
			A. cardiophylla						
			A. collettiodes						
			A. craspedocarpa						
			A. dealbata		✓				X
			A. decurrens		✓				X
			A. gerardii						
			A. giraffae						
			A. karoo						
			A. podalyriifolia		✓				
			A. pravissima						
			MODERATELY RESISTANT SPECIES						
			A. cultriformis		✓				
			A. cunninghami						
			A. cyanophyulla						
			A. iteaphylla						
			A. mearnsii						
			A. robusta						
			A. triptera						
			SUSCEPTIBLE SPECIES						
			A. cyclops						
			A. implexa						

			A. longifolia		✔				X
			A. melanoxylon		✔		✔		X
			A. obtusata						
			A. pendula		✔				
			A. penninervis						
			A. retinodes						
			A. salingna		✔				
			A. spectobilis						
Ash (white)	***Fraxinus***	**Resistance to:** Ash Anthracnose	**RESISTANT SPECIES**						
			F. Americana			✔			
			SUSCEPTIBLE SPECIES						
			Green Ash			✔			
Apple	***Malus***	**Resistance to:** Fireblight (*Erwinia amylovora*)	**RESISTANT SPECIES**						
			Delicious (SZ 7)						
			Empire (SZ 7, 14-16)						
			Golden Delicious (SZ 7-9, 14-17)						
			Honeycrisp (SZ 7, 14-16)						
			Hudson's Golden Gem (SZ 7,14-16)						
			Liberty (SZ 7-9, 14-16)						
			Stayman (SZ 7)						
			William's Pride (SZ 7)						
			Winesap						
			SUSCEPTIBLE SPECIES						
			M. Sylvestris 'Gala'						
Apricot	***Prunus***	**Resistance to:** Brown Rot	**RESISTANT SPECIES**						
			Harcot (SZ 7-9, 14-16)						
			Harglow (SZ 7-9, 14-16)						
			Tilton (SZ 7-9, 14-17)						
			SUSCEPTIBLE SPECIES						
			armeniaca						
Birch (European White, Jacquemonti & E. White Weeping)	***Betula***	**Resistance to:** Bronze Birch Borer (*Agrilus anxius*)	**RESISTANT SPECIES**						
			River Birch (*B. Nigra*)			✔			
			MODERATELY RESISTANT SPECIES						

				Gray Birch (*B. Populifolia*)				✔		
				Paper Birch (B. Papyrifera)				✔		
Birch (European White, Jacquemonti & E. White Weeping), continued	***Betula***	**Resistance to: Bronze Birch Borer (Agrilus anxius)**		Sweet Birch (*B. Lent*)				✔		
				Whitespire Birch (*B. Platyphylla japonica 'Whitespire'*) (SZ 7-9, 14-24)						
				Yellow Birch (*B. Lutea*)				✔		
			SUSCEPTIBLE SPECIES							
				B. Jacquemontii						
				B. Pendula						
				B. Pendula 'Youngii'						
Box elder	***Acer***	**Resistance to:** Boxelder bug (*Boisea trivittata*)	**RESISTANT SPECIES**							
				negudo (males) SZ 7-9, 14-17)	✔		✔	✔		
			SUSCEPTIBLE SPECIES							
				negudo (males) SZ 7-9, 14-17)	✔		✔	✔		
CA peppertree	***Schinus***	**Resistance to:** Peppertree psyllid (*Calophya rubra*)	**RESISTANT SPECIES**							
				Peppermint tree (*Agonis flexuosa*)	✔					X
				Narrow leaved pittosporum (*Pittosporum phillyraeoides*)	✔					X
				Australian willow (*Geijera parviflora*)	✔					X
			SUSCEPTIBLE SPECIES							
				molle	✔					X
CA white alder	***Alnus***	**Resistance to:** Flatheaded alder borer (*Agrilus burkeil*)	**RESISTANT SPECIES**							
				Al D13 cordata (Italian alder) (SZ 7-9, 14-17)						
			SUSCEPTIBLE SPECIES							
				rhombifolia						
Cherry	***Prunus***	**Resistance to:** Buckskin disease vectored by leafhoppers	**RESISTANT SPECIES**							
				Angela						
				Chinook						

			SUSCEPTIBLE SPECIES						
			avium						
Crabapple	***Malus***	**Resistance to:** Fireblight (Erwinia amylovora)	**RESISTANT SPECIES**						
			M. Sargentii (Sargent crabapple) (SZ 7-9, 14-17)						
			Adirondack						
			Ames White						
			Autumn Glory						
			Baskatong						
			Beauty						
			Coral Cascade						
			David						
			Donald Wyman						
			Gibb's Golden Gage						
			Golden Raindrops						
			Gwendolyn						
			Harvest Gold						
			Indian Summer						
			Molten Lava						
			Mount Arbor						
			Specian						
			Narangasett						
			Prairiefire						
			Professor Sprengber						
			Purple Prince						
			Red Snow						
			Tina						
			Wies						
			MODERATELY RESISTANT SPECIES						
			Adams						
			Albright						
			Albiplana						
			Brandywine						
			Callaway						
			Candied Apply						
			Coralburst						
Crabapple, continued	***Malus***	**Resistance to:** Fireblight	Dolgo						

(Erwinia amylovora)							
	Dorothea						
	Gorgeous						
	Katherine						
	Jewelbug						
	Liset						
	Mary Potter						
	Profusion						
	Radiant						
	Red Jewel						
	Red Jade						
	Royal Fountain						
	Riversii						
	Roseau						
	Sargent Crab						
	Selkirk						
	Sissipuk						
	Snowbank						
	Vanguard						
	M. X atrosunguineum (Carmine crabapple)						
	M. coranaria (Charlottae)						
	M. floribunda (Japanese flowering crabapple)						
	M. hupehensis (Tea Crabapple)						
SUSCEPTIBLE SPECIES							
	Malus x arnoliana Almey						
	M. lornsii 'Plena' (Bechtel Crabapple)						
	M. Oekonomiesatopa Echternefer Madora (Pink Weeper)						
	M. x purpurea(Purple Wave)						
	Eleyi Royalty						
	Golden Gem						
	Golden Horn						
	Henry F. Dupont						
	Shakers Gold						
	Silver Moon						
	Snow drift						
	Van Eseltine						
	Zuni						

				Beverly						
				Dorothea						
		Resistance to: Powdery Mildew	**RESISTANT SPECIES**							
				Osage						
				Pecos						
				Pwhatan						
				Seminole						
				Sioux						
				Tuscarora						
				Tuskegee						
				Wichita						
				Yuma						
				Zuni						
Crape myrtle	***Lagerstroemia***	**Resistance to:** Powdery Mildew	**RESISTANT SPECIES**							
				Acoma		✔				
				Apalachee		✔				
				Biloxi		✔				
				Catawba		✔				
				Cherokee		✔				
				Comanche		✔				
				Hopi		✔				
				Lipan		✔				
				Miami		✔				
Crape myrtle, continued	***Lagerstroemia***	**Resistance to:** Powdery Mildew		Muskogee		✔				
				Natchez		✔				
			MODERATELY RESISTANT SPECIES							
				Baton Rouge		✔				
				Purple Velvet		✔				
			SUSCEPTIBLE SPECIES							
				indica		✔				
Elm	***Ulmus***	**Resistance to:** Elm leaf beetle (*Xanthogaleruca lueteola)*	**RESISTANT SPECIES**							
				parvifolia(Evergreen) (SZ 7-9, 14-17)		✔		✔		
				U. Japonica (Japonese elm)		✔		✔		
				U. wilsoniana		✔		✔		

				U. Changii		✔		✔		
				U. Lanceafolia		✔		✔		
				U. Prunifolia		✔		✔		
				U. Pseudopropinqua		✔		✔		
				U. Taihangshanensis (Asian Elms from China)		✔		✔		
				U. Accolade		✔		✔		
				MODERATELY RESISTANT SPECIES						
				U. pumila (Siberian elm)		✔		✔		
				U. Americana (American elm)		✔		✔		
				SUSCEPTIBLE SPECIES						
				U. europaeus (European)		✔		✔		
				U. procera (English)		✔		✔		
				U. glabara (Scotch)		✔		✔		
			Resistance to: European elm scale (Gossyparia spuria)	**RESISTANT SPECIES**						
				Zelcova serrata (Japonese zelkova) (SZ 7-9, 14-21)						
				Celtis spp. (Hackberry)		✔	✔			
				SUSCEPTIBLE SPECIES						
				U. Americana (American elm)						
				U. europaeus (European)						
				U. procera (English)						
				U. glabara (Scotch)						
Elm	***Ulmus***		**Resistance to:** Dutch Elm Disease (Ophiostoma ulmi) - carried and spread by bark beetles.	**RESISTANT SPECIES**						
				U. Americana (American elm)						
				U. Wilsoniana (Prospector Elm)						
				U. carpinifolia X parvifolia (Frontier Elm) (SZ 7-9, 14-21)						
				Balley Forge						
				New Harmony						
				Ohio						
				Pathfinder						
				Dynasty						
				Homestead						

			SUSCEPTIBLE SPECIES							
				U. Europaeus (European)						
				U. Procera (English)						
				U. glabara (Scotch)						
Eucalyptus: Blue gum, Karri gum, Sydney blue gum, Manna gum	***Eucalyptus***	**Resistance to:** Eucalyptus longhorned borer (*Phoracantha semipunctata*)	**RESISTANT SPECIES**							
				E. camaldulensis(Red river gum)		✔	✔			X
				E. cladocalyx (Sugar gum)		✔				
				E. robusta (Swamp mohagonay)		✔				
				E. sideroylon (Red ironbark)		✔				
			SUSCEPTIBLE SPECIES							
				E. globulus (Blue gum)		✔				X
				E. diversificolor (Karri gum)		✔				
				E. viminalis (Manna gum)		✔				
Red River Gum, Forest Red Gum	***Eucalyptus***	**Resistance to:** Red gum lerp psyllid (Glycaspis brimblecombei)	**RESISTANT SPECIES**							
				Argyle apple (*E. ccineara*)						
				Red flowering gum (*E. ficifolia*)						
				Silver dollar gum (*E. polyanthemae*)						
				Silver leaved gum (*E. pulverulenta*)						
Red River Gum, Forest Red Gum, continued	***Eucalyptus***	**Resistance to:** Red gum lerp psyllid (Glycaspis brimblecombei)		Sydney blue gum (*E. saligna*)						
				Swamp gimlet (*E. sparthulata ssp. Spanthulata*)						
			MODERATELY RESISTANT SPECIES							
				Sugar gum (*E. cladocalyx*)						
				Blue gum (*E. globulus*)						
				Grey Ironbark (*E. paniculata*)						
				Round leaved moort (*E. platypus*)						
				Swamp mahogany (*E. robusta*)						
				Red Ironbark (*E. sideroxylon*)						
			SUSCEPTIBLE SPECIES							
				River red gum (*E. rudis*)		✔	✔			X
				Forest red gum (*E. tereticornis*)						

Honey locust	***Gleditsia***	**Resistance to:** Honeylocust pod gall midge (Dasineura gleditschiae)	**RESISTANT SPECIES**						
			Sunburst		✔				
			MODERATELY RESISTANT SPECIES						
			Shademaster		✔				
			SUSCEPTIBLE SPECIES						
			G. triacanthos		✔				
Northern white cedar	***Thuja***	**Resistance to:** Cypress tip miner (Argyresthia cupressella)	**RESISTANT SPECIES**						
			T. plicata (Western red cedar) (SZ 1-9, 14-17)						
			SUSCEPTIBLE SPECIES						
			T. occidentalis						
Peach	***Prunus***	**Resistance to:** Peach leaf curl (*Taphrina deformans)*	**RESISTANT SPECIES**						
			Frost (SZ 7-9, 14)						
			Q1-8 (SZ 7-9, 14, 15)						
			SUSCEPTIBLE SPECIES						
			P. persica						
Eastern red cedar	***Juniperus***	**Resistance to:** Cypress tip miner (Argyresthia cupressella)	**RESISTANT SPECIES**						
			Chinese juniper (*J. chinensis*)		✔				
			J. scopulorum		✔				
			SUSCEPTIBLE SPECIES						
			J. virginiana'Cupressifolia'		✔				
Italian cypress, birch, ceanothus, fir, maple, poplar, redbud and willow	***Cupressus, Betula, Ceanothus, Abies, Acer, Populus, Cercis, Salix***	**Resistance to:** Cytospora canker (Cytospora spp.)	**RESISTANT SPECIES**						
			Populus spp. 'Nor'			✔			
			Populus spp. 'Easter'			✔			
			Populus spp. 'Platte'			✔			
			Populus spp. 'Mighty Mo'			✔			
			SUSCEPTIBLE SPECIES						
			sempervirens (Italian cypress)			✔			

London plane	***Platanus***	Resistance to: Powdery Mildew	**RESISTANT SPECIES**						
			Platanus 'Bloodgood'		✔	✔			
			SUSCEPTIBLE SPECIES						
			Platanus X acerfolia		✔	✔			
London plane	***Platanus***	**Resistance to:** Sycamore anthracnose	**RESISTANT SPECIES**						
			Platanus 'Yarwood'		✔	✔			
			SUSCEPTIBLE SPECIES						
			Platanus X acerfolia		✔	✔			
Monterey, Knobcone & Bishop pine	***Pinus***	**Resistance to:** Pine pitch canker (Fusarium subglutinans) carried by twig and cone beetles	**RESISTANT SPECIES**						
			Canary Island Pine (*P. canariensis*) (SZ 8,9,14-17)		✔				
			Italian Stone Pine (*P. pinea*) (SZ 8,9,14-17)		✔				
			African Yew Pine (*Podocarpus gracilor*) (SZ 8,9,14-17)						
			River She Oak (*Casuarina cunninghamiana*) (SZ 8,9,14-17)		✔				
			***resistant in greenhouse, not infected in field but not near infections**						
			Japanese black pine (*P. thunbergiana*)* (SZ 7-9, 14-17)						
			MODERATELY RESISTANT SPECIES						
			***infected in greenhouse but no significant natural infections observed**						
Monterey, *Knobcone & Bishop* pine, continued	**Pinus**	**Resistance to:** Pine pitch canker (Fusarium subglutinans)	Coulter Pine (*P. Coulteri*)*						
			Jeffrey Pine (*P. Jeffreyi*)*						
			Sugar Pine (*P. Lambertiana*)*						
			Ponderosa Pine (*P. ponderosa*)*						
			Gray Pine (*P. sabiniana*)*						
			SUSCEPTIBLE SPECIES						
			P. radiata						
			P. attenuata						
			P. muricata						
			***significant greenhouse and naturally occuring infections**						

25

			observed						
				Shore Pine (*P. contorta*)*					
				Aleppo Pine (*P.halepensis*)*					
Pear (Bradford - ornamental)	***Pyrus***	**Resistance to:** Fireblight (Erwinia amylovora)	**RESISTANT SPECIES**						
				P. betufolia					
				P. calleryana 'Bradford'					
				P. calleryana 'Dancer'					
				P. calleryana 'Chatnicleer'					
			SUSCEPTIBLE SPECIES						
				P. calleryana 'Aristocrat'					
				P. calleryana 'Autumn blaze'					
				P. calleryana 'Capital'					
				P. calleryana 'Redspire'					
Pear	***Pyrus***	**Resistance to:** Fireblight (Erwinia amylovora)	**RESISTANT SPECIES**						
				P. communis 'Conference'					
				P. communis 'Fan Stil'					
				P. communis 'Harrow delight'					
				P. communis 'Kieffer'					
				P. communis 'Hood'					
				P. communis 'Magness'					
				P. communis 'Monterrey'					
				P. communis 'Moonglow'					
				P. communis 'Orient'					
				P. communis 'Sure Crop'					
				P. communis 'Warren'					
			MODERATELY RESISTANT SPECIES						
				P. communis 'Seckel'					
				P. communis 'Winter Nellis'					
			SUSCEPTIBLE SPECIES						
				P. communis 'Bartlett'					
				P. communis 'Bosc'					
				P. communis 'Clapp'					
				P. communis 'Favorite'					
				P. communis 'Max red'					
				P. communis 'Sensation'					

				Troubadour							
				Vienna Waltz							
				Voodoo							
				Westergeist							
				Fuschia magellanica 'Campo Thilco'							
Rhododendron	***Rhododendron***	**Resistance to:** Black vine weevils (*Sciotpithes obscures, Otiorhynchus sulcatus, O. singularis, Nemocestes incomptus, Dryslobus spp.*)	**RESISTANT SPECIES**								
				R: heliolepis							
				R. impeditum							
				R. scintillans							
				R. burmanicum (SZ 15-17)							
				P.J Mezzit							
Rhododendron, continued	***Rhododendron***	**Resistance to:** Black vine weevils (Sciotpithes obscures, Otiorhynchus sulcatus, O. singularis, Nemocestes incomptus, Dryslobus spp.)	**MODERATELY RESISTANT SPECIES**								
				Jock							
				Sapphire							
				Rose Elf							
				Cilpimense							
				Lucky Strike							
				Exbury							
				Virginia Richards							
				Cowslip							
				Suscombei							
				Vanessa							
				Oceanlake							
				Dora Amateis							
				Crest							
				R. dauricum							
				R. intricatum							
				R. minus							
				R. desquamatum							
				R. ferrugineum							

	R. hemsleyanum						
	R. cuneatum						
	R. fastigiatum						
	R. yakusimanum						
	R. ungernii						
	R. rubiginosum						
	R. irroratum						
	R. racemosum						
	R. rusatum						
	R. carolinianum						
	R. oreodaxa						
SUSCEPTIBLE SPECIES							
	R. davidsonianum						
	R. discior						
	R. ciliatum						
	R. yunnanense						
	R. concinnum						
	R. imperator						
	R. eurysiphon						
	R. hippophaeoides						
	R. praestans						
	R. diaprepes						
	R. xanthocodon						
	R. campylogynum						
	R. adenophorum						
	R. vernicosum						
	R. creotrephes						
	Rainbow						
	Point Defiance						
	Naomi						
	Pilgrim						
	Letty Edwards						
	Odee Wright						
	Moonstone						
	Lady Clementine Mitford						
	Candi						
	Graf Zeppelin						
	Snow Lady						
	Loderi Pink Diamond						

				Faggetter's Favorite						
Rosa	***Rosa spp.***	**Resistance to:** Powdery Mildew	**RESISTANT SPECIES**							
				Simplicity						
				Meidiland						
Rosa, continued	***Rosa spp.,***	**Resistance to:** Powdery Mildew	**Floribundas**							
				Class Act						
				Escapae						
				French Lace						
				Iceberg						
				Intrigue						
				Koricole						
				Lavaglut						
				Playboy						
				Playgirl						
				Regensbery						
				Rob Roy						
				Sarabande						
				Sexy Rexy						
			Grándifloras							
				Love						
				Prima Donna						
				Sonia						
			Hybrid Teas (SZ 7-9, 14-17)							
				Bobby Charlton						
				Bride's Dream						
				Canadian White						
				Stardust						
				Cary Grant						
				Chablis						
				Dainty Bess						
				duet						
				Electron						
				Elina						
				Elizabeth Taylor						
				Elmhurst						
				Folklore						
				H. Schmidt						

GROUNDCOVERS									
Chewings fescue	***Festuca***	**Resistance to:** Lawn moths - Lucerne moth (Nomophila noctuella); Sod webworms (Tehama bonifatella, Crambus speryelius)	**RESISTANT SPECIES**						
				Jamestown II		✔				
			SUSCEPTIBLE SPECIES						
				F. rubra 'commutata'		✔				
Creeping red fescue	***Festuca***	**Resistance to:** Powdery Mildew	**RESISTANT SPECIES**						
				Dawson		✔			✔	
				Ruby		✔			✔	
			SUSCEPTIBLE SPECIES						
				F. rubra 'rubra'		✔			✔	
Strawberry	***Fragaria***	**Resistance to:** Gray mold	**RESISTANT SPECIES**						
				Shuksan					✔	
			SUSCEPTIBLE SPECIES						
				anamassa					✔	
			Varieties						
				Toklat					✔	
				Douglas					✔	
Strawberry	***Fragaria***	**Resistance to:** Powdery Mildew	**RESISTANT SPECIES**						
				Aromas					✔	
				Benton					✔	
				Hood					✔	
				Puget					✔	
				Beauty					✔	
				Tillikum					✔	
				Tristan					✔	
			MODERATELY RESISTANT SPECIES							
Strawberry	***Fragaria***	**Resistance to:** Two spot mite (Tetryanchus urticae)	Brighton					✔		

			SUSCEPTIBLE SPECIES							
				F. anamassa 'Camarossa'					✔	
			RESISTANT SPECIES							
				Muir					✔	
				Oso					✔	
				Grande					✔	
				Seascape					✔	
				Capitola					✔	
				Sunset					✔	
				Aromas					✔	
				Diamante					✔	
				Pacific					✔	
				Tioga					✔	
				Cuesta					✔	
Strawberry, continued	***Fragaria***	**Resistance to:** Two spot mite (Tetryanchus urticae)		Camarosa					✔	
				Carlsbad					✔	
				Gaviota					✔	
				C207					✔	
			SUSCEPTIBLE SPECIES							
				F. anamassa 'Camarossa'					✔	
				Selva					✔	
				Chandler					✔	

PROPERTY MAINTENANCE FACT SHEET

Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Landscape Maintenance Techniques for Pest Reduction

Who should use this Fact Sheet?

- Development Project Applicants
- City/County Planners
- Landscape Maintenance Personnel
- Landscape Architects
- Homeowners

Why is it Important to Reduce Pesticide Usage?

When it rains, pesticides used in maintaining landscapes and gardens are washed off the plants and soils they are used to protect. This stormwater runs off the landscape and flows to the nearest storm drain, which ultimately carries the water to a local creek or the San Francisco Bay without treatment. Pesticides carried with stormwater into creeks and the Bay are harmful to the fish and other organisms that live there. Minimizing our use of pesticides in landscape maintenance helps protect water quality, aquatic life, and our own health.

What is Integrated Pest Management?

Integrated Pest Management (IPM) is a decision-making process for managing pests that uses monitoring to determine pest-caused injury levels and determine the best methods for their control. IPM uses a combination of :

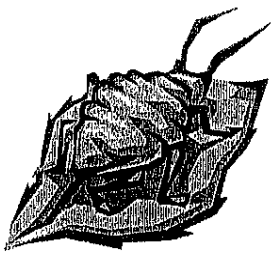
- biological controls (e.g., natural enemies or predators);
- physical or mechanical controls (e.g., hand labor or mowing);
- cultural controls (e.g., mulching, discing, or alternative plant type selection); and
- reduced risk chemical controls (e.g., soaps or oils)

in order to minimize pesticide usage. The IPM method uses the least hazardous pesticides only as a last resort for controlling pests.

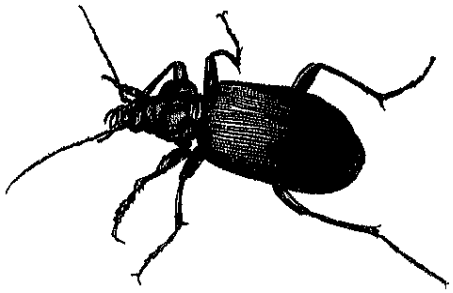
How Can Landscape Design and Maintenance Techniques Reduce Pesticide Usage?

Pesticides are often used in maintaining landscapes. The amount of pesticides entering our waters can be decreased by using alternative design and maintenance techniques that:

- Reduce the potential for the pesticides to run off the landscape;
- Reduce the amount of chemicals necessary to ensure healthy plants or eliminate the need for pesticide usage at all; or,
- Decrease the need for landscape maintenance by designing landscapes that minimize pest infestation and create low maintenance environments.



Refer to the back of this fact sheet for more design and maintenance tips.



Pest Reducing Landscape Design Techniques

- Design the landscape for efficient irrigation and drainage.
- Design the landscape to conform to natural drainage patterns.
- Retain existing native, pest-resistant trees, shrubs and plants.
- Select pest-resistant plants adapted to your specific area. Consider site-specific characteristics such as the soil, topography, climate, amount and timing of sunlight, prevailing winds, rainfall, air movement, patterns of land use, ecological consistency and plant interactions.
- Prevent the need for routine pruning by selecting plants based on their size and shape when mature.
- Situate plants to facilitate maintenance. Install mowing strips, tree wells and pathway edging to reduce problems associated with maintaining the interface between different elements of the design.
- Plant at the right time of year.

Pest Reducing Landscape Maintenance Techniques

- Employ Integrated Pest Management methods before using chemical pesticides to treat a pest problem (i.e., biological, physical and cultural controls).
- If pesticides are necessary, use the least toxic pesticide available. Avoid use of organophosphates such as diazinon and chlorpyrifos (Dursban) as well as copper-based pesticides.
- Do not over apply pesticide. Spray only where the infestation exists. Follow the manufacturer's instructions for mixing and applying materials.
- Properly sweep up spilled fertilizers or pesticides. Do not wash away or bury such spills.
- Properly dispose of chemical wastes by recycling, reusing, or disposing of as hazardous waste. Do not dispose of debris into or near channels or other waterways or leave it where it may contact runoff.
- Apply pesticides at the appropriate time to maximize their effectiveness and minimize the likelihood of discharging undegraded pesticides into runoff. With the exception of pre-emergent pesticides, avoid application if rain is expected.
- Maintain healthy soils by incorporating organic matter, making regular pH adjustments, and appropriately fertilizing.
- Do not overwater.
- Do not allow irrigation overspray.
- Prune to increase air circulation but do not overprune.
- Apply 2-4 inches of mulch or geotextiles to exposed soils to prevent weed growth.
- Mow lawns and turf high and leave clippings in place.
- Replace problem plants with locally-adapted, pest resistant plants.
- Remove, rake up and dispose of diseased plant parts.

ADDITIONAL RESOURCES

IPM Access, www.efn.org/~ipmpa, *IPM Based Landscape Design.*

Bio-Integral Resource Center (BIRC) (510) 524-2567

Central Contra Costa County Sanitary District
Our Water Our World IPM Fact Sheets
www.centralsan.org

San Francisco Department of the Environment
www.sfenvironment.com

www.watershedwatch.net

Pest Resistant Plant List www.scvurppp.org

University of California Cooperative Extension Master Gardeners (in the phone book)

University of California IPM (800) 994-8849
www.ipm.ucdavis.edu

- Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control
- The UC Guide to Solving Garden and Landscape Problems: An Interactive CD- ROM
- Pests of Landscape Trees and Shrubs

(2)

SPECIAL CONDITIONS OF APPROVAL

Construction BMPs

Standard Special Conditions

Operational BMPs

Construction BMPs for All Projects:

Prior to grading, site improvement and building permit issuance, project plans shall state the following construction BMPs:

1. Store, handle, and dispose of construction materials and wastes properly, so as to prevent their contact with storm water. Cover stockpiles and excavated materials with tarps or plastic sheeting.
2. Control and prevent the discharge of all potential pollutants, including solid wastes, paints, concrete, petroleum products, chemicals, washwater or sediment, and non-storm water discharges to storm drains and watercourses.
3. Protect nearby storm drains by covering and sealing when weather is dry.
4. Never hose off spilled materials or accumulated sediments. Use dry methods to clean such as sweeping, vacuuming or using absorbent materials.
5. Use sediment controls or filtration to remove sediment from dewatering effluent.
6. Avoid cleaning, fueling, or maintaining vehicles on-site, except in a designated area in which runoff is contained and treated.
7. Delineate clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses with field markers.
8. Protect adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.
9. Perform clearing and earth moving activities only during dry weather.
10. Limit and time applications of pesticides and fertilizers to prevent polluted runoff.
11. Limit construction access routes and stabilize designated access points.
12. Avoid tracking dirt or other materials off-site. Clean off-site paved areas and sidewalks using dry sweeping methods, never hose these areas.
13. When sawcutting, contain and vacuum off the slurry that is generated.
14. Washout concrete mixers in a contained area only, recycle washwater where possible.
15. Wash latex painting equipment to the sanitary sewer only. Recycle or dispose of thinners as a hazardous waste.
16. Provide training to employees on employing Best Management Practices to protect storm water quality.

Construction BMPs

EROSION AND SEDIMENT CONTROLS

The following requirements apply if an erosion and sediment control plan is required.

Prior to grading, site improvement and building permit issuance, project plans shall state the following construction BMPs:

1. Stabilize all denuded areas and install and maintain all temporary erosion and sediment controls continuously between October 1 and May 1 of each year, until permanent erosion controls have been established.
2. Provide a site plan showing the following site characteristics and improvements:
   - property lines, existing and proposed topography, and slopes;
   - areas to be disturbed, locations of cut/fill, and soil storage/disposal areas;
   - areas with existing vegetation to be protected;
   - existing and proposed drainage patterns and structures;
   - watercourses or sensitive areas on-site or immediately downstream of project;
   - designated construction access routes and staging areas.
3. Provide a site plan showing erosion and sediment controls to be used during construction, selected as appropriate from the *California Construction BMP Handbook* (1993) or ABAG *Manual of Standards for Erosion and Sediment Control Measures* (1995):
   - Provisions for preventing erosion and trapping sediment on-site, such as sediment basins or traps, earthen dikes or berms, silt fences, straw bale dikes, check dams, storm drain inlet protection, soil blankets or mats, covers for soil stock piles, and/or other measures.
   - Provisions for vegetative cover in disturbed areas, including areas to be seeded, planted, and/or mulched, and types of vegetation proposed.
   - Provisions for diverting on-site runoff around exposed areas and diverting off-site runoff around the site (e.g., swales and dikes).
   - Provide notes, specifications, or attachments describing the following:
   - Construction, operation and maintenance of erosion and sediment control measures, including inspection frequency;
   - Methods and schedule for grading, excavation, filling, clearing of vegetation, and storage and disposal of excavated or cleared material;
   - Specifications for vegetative cover and mulch, including methods and schedules for planting and fertilization;
   - Provisions for temporary and/or permanent irrigation.

Construction BMPs

PROJECTS WITH ≥ 1 ACRES DISTURBED AREA -- *The following requirements apply to all projects with 1 acres or more of disturbed area, which must file a Notice of Intent (NOI) with the State Water Resources Control Board to obtain coverage under the State General Construction Activity NPDES Permit, and must prepare and implement a Storm Water Pollution Prevention Plan (SWPPP).* ***Note: Completion of this checklist does not imply certification of the adequacy of the SWPPP by Milpitas.***

1. A copy of the project's NOI and SWPPP shall be submitted to the planning, building, or engineering department prior to issuance of a grading or building permit.
2. A copy of the project's NOI and SWPPP shall be kept on-site and made available for review by the inspector upon request.
3. In addition to erosion control measures in Section II, the SWPPP shall include:

- A plan showing designated areas for 1) storage of soils, wastes, and other construction materials, and 2) vehicle and equipment storage and service.
- Descriptions of construction BMPs (to be implemented year round) for:
- Minimizing pollutant contact with storm water;
- Storage, handling and disposal of construction materials and wastes;
- Management of non-storm water discharges; and
- Spill prevention, control, and cleanup.
- Descriptions of and plans showing permanent storm water control measures, and plans for their inspection and maintenance;
- A storm water monitoring program including site inspections prior to and immediately after storm events.

RECOMMENDED STANDARD SPECIAL CONDITIONS

1. Prior to building, site improvement or landscape permit issuance, the building permit application shall be consistent with the applicant's approved Stormwater Control Plan and approved special conditions, and shall include drawings and specifications necessary to implement all measures described in the approved Plan. As may be required by the City's Building, Planning or Engineering Divisions, drawings submitted with the permit application (including structural, mechanical, architectural, grading, drainage, site, landscape and other drawings) shall show the details and methods of construction for site design features, measures to limit directly connected impervious area, pervious pavements, self-retaining areas, treatment BMPs, permanent source control BMPs, and other features that control stormwater flow and potential stormwater pollutants.
2. Prior to issuance of Certificate of Occupancy, the applicant shall submit a stormwater control operation and maintenance plan, acceptable to the City, describing operation and maintenance procedures needed to insure that treatment BMPs and other stormwater control measures continue to work as intended and do not create a nuisance (including vector control). The treatment BMPs shall be maintained for the life of the project. The stormwater control operation and maintenance plan shall include the applicant's signed statement accepting responsibility for maintenance until the responsibility is legally transferred.
3. The permitted use is conditioned on continuous and thorough implementation of the following operational stormwater pollution prevention BMPs for the life of the project. Failure to comply with this condition may be considered grounds for Use Permit revocation:

   [Specify operational BMPs appropriate to the project] [This condition to be used where approval is revocable, e.g. conditional use permit]

ENGINEERING SPECIAL CONDITION

The U.S. Environmental Protection Agency (EPA) has empowered the San Francisco bay Regional Water Quality Control Board (RWQCB) to administer the National Pollution Elimination Discharge System (NPDES) permit. The NPDES permit requires all dischargers to eliminate as much as possible pollutants entering our receiving waters. Construction activities which disturb 5 acres (1 acre after March 10, 2003) or greater are viewed as a source of pollution, and the RWQCB requires a Notice of intent (NOI) be filed, along with obtaining an NPDES Construction Permit prior to the start of construction. A Storm Water Pollution Prevention Pan (SWPPP) and a site monitoring plan must also be developed by the applicant, and approved by the City prior to permit issuance for site clearance or grading. Contact the RWQCB for questions regarding your specific requirements at (800) 794-2482. For general information, contact the City of Milpitas at (408) 586-3329.

OPERATIONAL BMPs

(These include Milpitas special conditions that the Planning Commission has approved for previous projects)

For Restaurants:

1. Prior to building permit issuance, the applicant shall submit to the Planning Division a program assigning restaurant staff responsibility for complying with the following guidelines. The restaurant shall adhere to the following guidelines in perpetuity:
   - Keep garbage dumpsters clean inside and out; replace very dirty dumpsters with new, clean ones.
   - Double or triple-bag waste to prevent leaking.
   - Place, do not drop or throw, waste-filled bags, to prevent leaking.
   - Keep the ground under and around the garbage dumpsters swept.
   - Sprinkle the ground lightly after sweeping with a mixture of water and a little bleach.
2. The business owner shall hold training sessions to instruct their employees on the proper procedures in the handling and disposal of food items, the general maintenance and use of the compactor and any other procedures that would assist the business in complying with all State and local health and sanitation standards (refer to the County of Santa Clara Department of Environmental Health at (408) 729-5155 for their guidelines). Prior to issuance of a certificate of occupancy, the business owner shall submit an outline of the format and number of training sessions to the Planning Division to address training in preparation for opening, for new employees, and for annual recurring training. The business owner shall keep training records in perpetuity.
3. Prior to building permit issuance, the business owner shall post signs (in English, Spanish, ___) inside the premises for all employees which identify procedures for the food delivery and disposal of garbage.
4. Prior to building permit issuance, the applicant shall submit tenant improvement plans that incorporate an indoor mat and equipment washing area that drains to the sanitary sewer. In addition, all floor drains and trash compactors shall drain to the sanitary sewer.
5. Washing of containers and equipment shall be conducted in the kitchen area such that wash water may drain into the sanitary sewer.

Site & Architectural Review Projects

6. Label storm drain facilities "No Dumping – Drains to Bay," to alert the public to the destination of the storm drains. A note describing this requirement shall be included on the plans submitted for plan check.

7. Inlet trash racks or bars should be installed at all surface drainage inlets to prevent trash and floating debris from entering the storm drain system.

Trash Enclosures

8. Common area litter control through routine removal of waste from receptacles. Site litter shall be strictly controlled, and trash and recycling containers will be provided throughout the site.

Landscaping

9. The City Planning staff shall approve the installation of comparable substitute pest-resistant plant materials to satisfy the requirements of the approved landscape plan when the approved plants and materials are unavailable for installation, or when other unforeseen conditions prevent the exact implementation of the landscape plan. [From Model Conditions of Approval for Pesticide Reduction in Landscape Plans]
10. Proper maintenance of landscaping, with minimal pesticide use, shall be the responsibility of the property owner (refer to Attachment C, "Fact Sheet on Landscape Maintenance Techniques for Pest Reduction" for information), and shall be addressed in the applicant's required operation and maintenance plan prior to issuance of Certificate of Occupancy. [From Model Conditions of Approval for Pesticide Reduction in Landscape Plans]
11. Landscaping shall be installed prior to building occupancy.
12. For residential projects, front yard landscaping shall be installed prior to occupancy. Back yard landscaping shall be installed prior to occupancy, if drainage is connected directly to the storm drain system.

Construction

13. During construction, the applicant shall ensure that fire hydrant test water .....
14. During construction, the applicant shall adhere to the following Best Management Practices as suggested in the Santa Clara Valley Non-Point Source Pollution Control Program's "Best Management Practices for Industrial Storm Water Pollution Control": (BMPs)
    - Store building materials under cover or in enclosed areas.
    - Before painting, spread a ground cloth to collect paint.
    - Mix paint indoors before starting work.
    - Keep paint buckets away from contact with storm water.
    - Capture any paint spills before they flow into a storm drain.
    - During painting cleanup, use proper procedures and prevent paint from flowing into storm drains.

Operational

OPERATIONAL BMPS (from Model List of Source Control Measures)

A. Paved Sidewalks and Parking Lots

36. Sidewalks and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris resulting from pressure washing shall be trapped and collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and shall not be discharged to a storm drain. The applicant shall contact the local permitting authority and/or sanitary district with jurisdiction for specific connection and discharge requirements.

B. Private Streets

37. Owner of private streets and storm drains shall prepare and implement a plan for street sweeping of paved private roads and cleaning of all storm drain inlets.

C. Vehicle/Equipment Repair and Maintenance

38. No person shall dispose of, nor permit the disposal, directly or indirectly, of vehicle fluids, hazardous materials, or rinsewater from parts cleaning operations into storm drains.
39. No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.
40. No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.

D. Fueling Areas

41. The property owner shall dry sweep the fueling area routinely.